

**REMARKS****Claim Rejections – 35 USC § 103**

The Office has quoted the statute from 35 USC 103(a), which is referenced herein. The Office has rejected claims 5, 7-9, 12, 15-16, and 18-19 as being unpatentable over Braunagel's 241 in view of Stangeland's 146. The Office rejected claims 10, 11, 13, 17 and 20 under 35 USC 103(a) as being unpatentable over Plesko's 442 in view of Braunagel in view of Stangeland. The Office rejected claims 21, 22, 23 under 35 USC 103(a) as being unpatentable over Braunagel in view of Stangeland as applied to claims 12 and 18, and further in view of Yonei's 326. Applicant has carefully reviewed the cited art, considered the Office rejections and respectfully submits that the cited combinations are improper, and/or the claims as herein amended, as supported by the specification and arguments herein, are distinguishable from the prior art.

The Applicant's invention is fundamentally the incorporation of a pair of all ceramic bearing assemblies and uniform thermal expansion of bearings and other components into the design of high precision, uniform performance, partial rotation torque motors, specifically for galvanometer scanners, as has been the intent of the claims throughout the prosecution of this application. Current amendments to claims 5, 9, 10, 12, and 18 provide a uniform further limitation to the claimed invention as a device having *two ball bearings* which provide *less than about one micro-radian* range of axial precision *over substantially the full service temperature range* of the device. This is not claimed as a point of novelty in and of itself, but is rather an application related limitation that is described in the background section of the application, and further distinguishes the device from anything incorporating a Braunagel-like bearing. The specific temperature limits of a full service temperature range are not specified in the claims, but the term as it is used here is readily understood in the art to mean a uniformity of performance with respect to the axial precision over the intended operating temperature range of the device. These limitations are recited in the background section of the specification as preferred for galvanometer scanner usage as opposed to the more general field of art, are well understood in the galvanometer art, and are suitable

limitations to the claimed device in order to limit the application as intended and to further distinguish the cited prior art.

Expanding on the differences in the amended claims and the cited art, Braunagel, the primary basis of the pending rejections, describes and illustrates a complex, heavy duty industrial bearing design *3 1/2 inches long and 3 1/2 inches in diameter, sized for a 1 inch shaft*. The Braunagel bearing illustrates multiple sets of roller bearings on a common race, providing a long length of contact area for bearing and shaft support, offering an inherent resistance to shaft wobble. While the description makes a one line reference to the possibility of using ball bearings, it is well understood in the art that a ball bearing is a substantially weaker design, usefully providing only a single plane of shaft support and offering little resistance to shaft wobble. Those skilled in the art would without doubt ignore the Braunagel reference to roller bearings as a general principle.

Furthermore, specific to the application at hand, *the Braunagel industrial roller bearing assembly alone is larger than the entire device described by this Applicant and in which two very small, single plane, precision ball bearings reside*. The Applicant has amended its claims for precision, and in some cases, added the further descriptive language, "single plane" to the ball bearing description. While the term does not appear in the specification, it is clearly an inherent quality of ball bearings, in the figures provided, and is even somewhat redundant, but also clearly avoids the art of Braunagel by any interpretation.

On the basis of the present amendments and the impossibility of using Braunagel in the same application, or the implausibility of combining Braunagel with the other cited art for this application, and the lack of appreciation or specificity in the Braunagel description for either the instant application, the bearing size, or the performance precision required, Applicant respectfully requests reconsideration and allowance of all claims.

According to the MPEP §2143.01, "[o]bviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some

teaching, suggestion, or motivation to do so found in either the references themselves or in the knowledge generally available to one of ordinary skill in the art."

A useful presentation for the proper standard for determining obviousness under 35 USC §103(a) can be illustrated as follows:

1. Determining the scope and contents of the prior art;
2. Ascertaining the differences between the prior art and the claims at issue;
3. Resolving the level of ordinary skill in the pertinent art; and
4. Considering objective evidence present in the application indicating obviousness or unobviousness.

The Office uses Braunagel in each recited combination to uphold the 103 rejections. The Office alleges the scope and content of Braunagel to disclose "ball" bearing assemblies based on the drafter's casual one line attempt at col. 1, line 64, to broaden its roller bearing disclosure to include ball bearings. This unpersuasive gambit to include the "alternate" type of bearing is unsupported by any explanation, substantiation or other corroboration in the specification that what is taught for the roller bearings is at all useful or applicable to ball bearings. As is well understood in the art, ball bearings represent a notably different architecture, more complex race and bearing contact geometry, different performance principles such as a contact point on each ball versus the line contact of a roller, a single plane of such contact points versus a sheath of support, orthogonal support force vectors including both radial and thrust components, and a different overall engineering design challenge. Roller bearings have a fundamentally higher radial load capacity and little thrust load capacity compared to the lower load capacity and multi-directional support capability of ball bearings. There is generally a clear preference for one type over the other in a given application. There is clearly no suggestion or reason for combining Braunagel with other ball bearing art to reach the claimed invention, even including the unpersuasive line 64 reference.

It must also be recognized that a combination of prior art is improper and not "obvious" if the only suggestion or reason for combining the teachings of the prior art is to be found in the

present application. In re Pye & Peterson, 148 USPQ 426 (CCPA 1966). Furthermore, it must be recognized that the fact that disclosures of references *can* be combined does not make the combination "obvious" unless the art also contains something to suggest the desirability of the combination. In re Rinehart, 189 USPQ 143 (CCPA 1975); In re Regel, 188 USPQ 136 (CCPA 1975); In re Avery, 186 USPQ 161 (CCPA 1975); In re Imperato, 179 USPQ 730 (CCPA 1973); and In re Andre, 144 USPQ 497 (CCPA 1965). Where is the suggestion in the 3 1/2 by 3 1/2 inch Braunagel device or in Stangeland of the desirability for applying the claimed pair of all ceramic, ball bearing assemblies and uniform thermal expansion to the limited rotation, high axial precision, galvanometer type application?

In other words, to properly combine two references to reach the conclusion that the subject matter of a patent would have been "obvious," case law now clearly requires that there must have been some teaching, suggestion or inference in at least one of the references, or both, or knowledge generally available to one of ordinary skill in the relevant art which would have led one skilled in the art to combine the relevant teachings of the two references. See, e.g., ACS Hospital Systems, Inc. v. Montefiore Hospital, 221 USPQ 929, 933 (Fed. Cir. 1984); W.L. Gore & Associates, Inc. v. Garlock, Inc., 220 USPQ 303, 311, Fed. Cir. 1983; and In re Sernaker, 217 USPQ 1, 5 (Fed. Cir. 1983).

The Federal Circuit has recently again strongly reaffirmed this cardinal principal of law. In In re Dembieczak, 50 USPQ 2d 1614, 1717-1618 (Fed. Cir. 1999), the Court stated:

All the obviousness rejections affirmed by the Board resulted from a combination of prior art references, e.g. the conventional trash or yard bags, and the Holiday and Shapiro publication teaching the construction of decorated paper bags. *See Dembieczak*, slip op. at 6-7. To justify this combination, the Board simply stated that "the Holiday and Shapiro references would have suggested the application of ... facial indicia to the prior art plastic trash bags." *Id.* at 18-19. However, rather than pointing to specific information in Holiday or Shapiro that suggest the combination with the conventional bags, the Board instead described in detail the similarities between the Holiday and Shapiro references and the claimed invention, noting that one reference or the other -- in combination with each other and the conventional trash bags -- described all of the limitations of the pending claims. *See id.* at 18-28. Nowhere does the Board particularly identify any suggestion, teaching, or motivation to combine the children's art references (Holiday and Shapiro) with the conventional trash or lawn bag references, nor does the Board make

specific -- or even inferential -- findings concerning the identification of the relevant art, the level of ordinary skill in the art, the nature of the problem to be solved, or any other factual findings that might serve to support a proper obvious analysis. See, e.g., Pro-Mold & Tool, 75 F. 3d at 1573, 37 USPQ 2d at 1630.

To the contrary, the obviousness analysis in the Board's decision is limited to a discussion of the ways that the multiple prior art references can be combined to read on the claimed invention. For example, the Board finds that the Holiday bag reference depicts a "premanufactured orange" bag material, *see Dembieczak*, slip op. at 21, finds that Shapiro teaches the use of paper bags in various sizes, including "large", *see id.* at 22-23, and concludes that the substitution of orange plastic for the crepe paper of Holiday and the paper bags of Shapiro would be an obvious design choice, *see id.* at 24. Yet this reference-by-reference, limitation-by-limitation analysis fails to demonstrate how the Holiday and Shapiro references teach or suggest their combination with the conventional trash or lawn bags to yield the claimed invention. See Rouffet, 149 F.3d at 1357, 47 USPQ 2d at 1459 (noting Board's failure to explain, when analyzing the prior art, "what specific understanding or technical principle ... would have suggested the combination"). Because we do not discern any finding by the Board that there was a suggestion, teaching, or motivation to combine the prior art references cited against the pending claims, the Board's conclusion of obviousness, as a matter of law, cannot stand. See C.R. Bard, 157 F.3d at 1352, 48 USPQ2d at 1232; Rouffet, 149 F.3d at 1359, 47 USPQ2d at 1459; Fritch, 972 F.2d at 1265, 23 USPQ2d at 1783; Fine, 837 F.2d at 1075, 5 USPQ2d at 1600; Ashland Oil, 716 F.2d at 297, 227 USPQ at 667.

(emphasis added)

Moreover, the Applicant respectfully submits that Braunagel in particular makes these improper combinations of references, in that, when taken as a whole, there is no motivation or suggestion to combine the references to achieve the Applicant's claimed invention. Section 2143.01 of the MPEP states: "The mere fact that references can be combined or modified is not sufficient to establish prima facie obviousness." In addition, the "level of skill in the art cannot be relied upon to provide the suggestion to combine references." Thus, it is inappropriate to use the Applicant's claims as a road map in selecting a combination of references to form a 103 rejection. Rather, there must be some objective reason to combine the teachings of the references to make the claimed invention. Applicant cannot find such an objective reason.

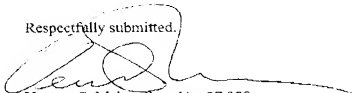
Applicant respectfully asserts that it is therefore impermissible for the Office to simply use the claims of this application as a blueprint and to abstract individual teachings from the

different pieces of prior art to create the combinations upon which to reject the claims of this application. There is no teaching, suggestion or motivation in any of the cited references for combining Braunagel with Stangeland or Plesko or Yonei to achieve the claimed invention. This was error as a matter of law. In re Dembiczak, 50 USPQ 2d at 1618 (Fed. Cir. 1999); W.L. Gore & Associates, Inc. v. Garlock, Inc., 220 USPQ at 312, Fed. Cir. 1983).

Applicant therefore respectfully requests the combinations cited in support of the 103 rejections be withdrawn, and/or all claims as amended, be allowed.

Applicant believes the above amendments and remarks to be fully responsive to the Office Action, thereby placing this application in condition for allowance. No new matter is added. Applicant requests speedy reconsideration, and further requests that Examiner contact its attorney by telephone, facsimile, or email for quickest resolution, if there are any remaining issues.

Respectfully submitted,



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